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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,188	08/14/2001	Christopher D.W. Jones	JONES 2-21-60	1211
27964	7590	10/07/2003	EXAMINER	
HITT GAINES P.C. P.O. BOX 832570 RICHARDSON, TX 75083			PHAM, HOAI V	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 10/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/929,188

Applicant(s)

JONES ET AL.

Examiner

Hoai V Pham

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-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 15, and 18-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Gupta et al. [U.S. Pat. 6,383,858] previously applied.

With respect to claims 15, 18-22, Gupta et al. (fig. 2A, cols. 3-4) discloses an interdigitated capacitor, comprising:

first electrodes (110) located on and interconnected by a first conductive layer (210), the first electrodes and the first conductive layer comprising a metal (copper) (col. 3, lines 51-53);

a high-K dielectric layer (130, silicon nitride, tantalum pentoxide) located over and between the first electrodes and on the first conductive layer (col. 4, lines 1-3); and

an electrode layer (120, 220) comprising the metal located on the high-K dielectric layer and over and between the first electrodes to form interconnected second electrodes over and between the first electrodes.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta et al. [U.S. Pat. 6,383,858] previously applied, as applied to claims 15, and 18-22 above, and further in view of Shih et al. [U.S. Pat. 6,436,787] previously applied.

Gupta et al. discloses all the limitation as claimed above except: a first barrier layer located between the first electrodes and the dielectric layer; and a second barrier layer located between the dielectric layer and the second electrodes. However, Shih et al. discloses the first barrier layer (26) located between the first electrodes (24) and the dielectric layer (28), and a second barrier layer (30) located between the dielectric layer and the second electrodes (34) to prevent copper ions from diffusing into the dielectric

layer thereby reducing the leakage current (see fig. 3, col. 3, lines 10-46). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the first and second barrier layers as taught by Shih et al. into the device of Gupta et al. in order to prevent copper ions from diffusing into the dielectric layer thereby reducing the leakage current.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta et al. [U.S. Pat. 6,383,858] previously applied.

Gupta et al. does not teach the exact an aspect ratio range of their first electrode, as claimed by Applicant. However, the aspect ratio range would have been obvious to an ordinary artisan practicing the invention because, absent evidence of disclosure of criticality for the range giving unexpected results, it is not inventive to discover optimal or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955).

Response to Arguments

7. Applicant's arguments filed 7/18/03 have been fully considered but they are not persuasive.

Applicant argues that Gupta does not teach an electrode layer comprising the metal located on the high-K dielectric layer and over and between the first electrodes to form interconnected second electrodes over and between the first electrodes.

Applicant's arguments are not persuasive because Gupta clearly discloses an electrode layer (120, 220) comprising the metal located on the high-K dielectric layer

and over and between the first electrodes to form interconnected second electrodes over and between the first electrodes (see fig. 2A and cols. 3-4). Furthermore, claim 15 does not claim that the first and second electrodes locate in different level in a cross-sectional view. Therefore, Gupta meets and anticipated the claim invention.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

9. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai V Pham whose telephone number is 703-308-6173. The examiner can normally be reached on 6:30A.M. - 6:00P.M..

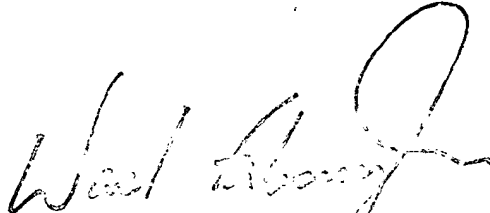
11. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on 703-308-4918. The fax phone numbers

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for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

12. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

HP
Hoai Pham
October 6, 2003


SUPERVISORY PRIMARY EXAMINER
TECHNOLOGY CENTER 2800